



Muon Collider Physics and Detector workshop - Logistical Details

Sergo Jindariani (sergo@fnal.gov) – on behalf of the organizers

15 Dec 2022

Welcome

- ♦ Welcome to the Muon Collider Physics and Detector Workshop, we are thrilled that you are here!
- ♦ Organized jointly by the Snowmass Muon Collider Forum participants and Future Colliders Group at Fermilab
- ♦ The workshop aims to:
 - Facilitate continued participation of the US HEP community in Muon Colliders.
 - Discuss engagement with the IMCC and next steps
 - Focus on physics and detector design with some relevant accelerator topics
- ♦ Well attended detector simulation tutorial yesterday!
- ♦ Hope this paves the way to more Muon Collider workshops/events in the future

Agenda - today

9:00 AM → 10:35 AM		Introduction	📍 1West	
Convener: Sergo Jindariani (Fermilab)				
9:00 AM	Workshop Logistics	Speaker: Sergo Jindariani (Fermilab)	🕒 5m	
9:05 AM	Welcome from the Fermilab's Future Colliders Group	Speaker: Pushpalatha Bhat (Fermilab)	🕒 20m	
9:25 AM	IMCC Status and Plans	Speaker: Nadia Pastrone (INFN-Torino)	🕒 20m	
9:45 AM	Muon Collider Forum Summary	Speaker: Kevin Black (University of Wisconsin, Madison)	🕒 20m	
10:05 AM	Discussion		🕒 25m	
10:30 AM → 11:00 AM		Coffee Break	🕒 30m	📍 1West
11:00 AM → 12:10 PM		Introduction	📍 1West	
Convener: Tova Holmes (University of Tennessee)				
11:00 AM	Accelerator R&D needs and near term priorities	Speaker: Vladimir Shiltsev (FNAL)	🕒 25m	
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11:25 AM	Interplay between Accelerator and Detector design	Speaker: Donatella Lucchesi (INFN-Padova)	🕒 25m	
11:50 AM	Discussion		🕒 20m	
12:10 PM → 1:30 PM		Lunch with the LPC community (WH11)	🕒 1h 20m	📍 WH11 Crossover

Introduction

Introduction

1:30 PM → 3:00 PM		Physics		Ramsey Auditorium	
Convener: Patrick Meade (Stony Brook University)					
1:30 PM	Why we need the energy frontier	*Only session outside of IWest		30m	
Speaker: Nathaniel Craig (UC Santa Barbara)					
2:00 PM	Electroweak Symmetry Breaking and physics opportunities			30m	
Speaker: Ian Low (Argonne/Northwestern)					
2:30 PM	Single Higgs Precision at a Muon Collider			25m	
Speaker: Matthew Forslund (Stony Brook University)					
Physics					
3:00 PM → 3:30 PM		Workshop Photo and Coffee Break		30m	1West
3:30 PM → 5:30 PM		Physics		1West	
Convener: Karri DiPetrillo (Fermilab)					
3:30 PM	Dark Matter at a Muon Collider			25m	
Speaker: Liantao Wang (University of Chicago)					
3:55 PM	Leptoquarks			25m	
Speaker: Rodolfo Capdevilla (Perimeter Institute and University of Toronto)					
4:20 PM	g-2 and Muon Collider			25m	
Speaker: Gordan Krnjaic (Fermilab)					
4:45 PM	HNL			25m	
Speaker: Kunfeng Lyu (University of Minnesota)					
5:10 PM	Discussion			20m	
6:00 PM → 7:30 PM		Workshop Reception		1h 30m	WH2 Crossover

*Only session outside of 1West

Physics

Physics

Agenda - tomorrow

9:00 AM → 10:40 AM	Simulation Framework Convener: Simone Pagan Griso (Lawrence Berkeley National Laboratory)	📍 1West	✎
9:00 AM	Overview of FullSim Framework Speaker: Nazar Bartosik (INFN Torino)	🕒 25m	✎
9:25 AM	Framework to do : from 3 to 10 TeV Speaker: Federico Meloni (Deutsches Elektronen-Synchrotron)	🕒 25m	✎
9:50 AM	FastSim with Delphes Speaker: Massimo Casarsa (INFN-Trieste)	🕒 25m	✎
10:15 AM	Discussion	🕒 15m	✎
10:30 AM → 11:00 AM	Coffee	🕒 30m	📍 1West
11:00 AM → 12:00 PM	Detectors Convener: Isobel Ojalvo (Princeton University (US))	📍 1West	✎
11:00 AM	Pheno Requirements ¶ Speaker: Zhen Liu (University of Minnesota)	🕒 25m	✎
11:25 AM	Detector needs from first principles Speaker: Tova Holmes (University of Tennessee)	🕒 25m	✎
11:50 AM	Discussion	🕒 10m	✎
12:00 PM → 1:00 PM	Lunch	🕒 1h	📍 1West

Framework

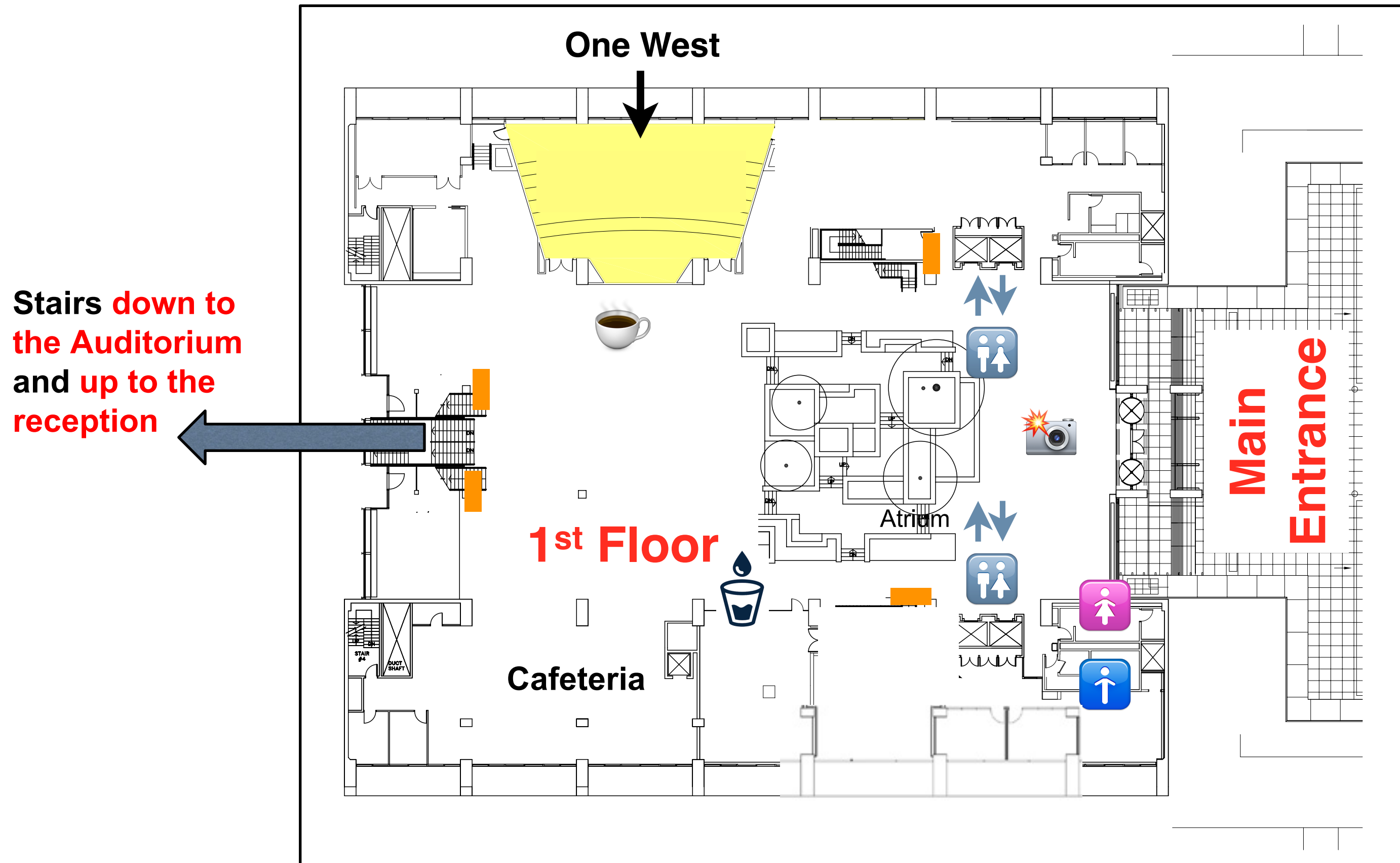
Detectors

1:00 PM → 2:30 PM	Synergies Convener: Sridhara Dasu (University of Wisconsin)	📍 1West	✎
1:00 PM	MuC Speaker: Darin Acosta (Rice University)	🕒 20m	✎
1:20 PM	Charged Lepton Flavor Violation Experiments Speaker: Robert Bernstein (Fermilab)	🕒 20m	✎
1:40 PM	Neutrinos Speaker: Katsuya Yonehara (Fermilab)	🕒 20m	✎
2:00 PM	Beam Dump Experiments Speaker: Cari Cesarotti (MIT)	🕒 20m	✎
2:30 PM → 3:30 PM	Wrap up and Next Steps: Summary discussion (Plans for 2023, P5/NAS input, etc)	📍 1West	✎
4:00 PM → 5:00 PM	Fermilab Wine and Cheese Seminar: Physics at the Muon Collider Speaker: Simone Pagan Griso (Lawrence Berkeley National Laboratory)	🕒 1h	📍 1West

Synergies

W&C seminar

Agenda - tomorrow



Coffee, Lunches, and Reception

- ♦ Coffee+snacks will be provided during the breaks. You can also purchase coffee at anytime in the cafeteria
- ♦ Lunch can be purchased at the cafeteria – salad or sandwich are usually the quickest options.
- ♦ On Thursday you can join LHC Physics Center (WH11) Holiday lunch (pizza/salads). A nice chance to socialize with CMS colleagues. Participants are asked to contribute 10\$ cash.
- ♦ Workshop photo in the Atrium during the 3pm Coffee Break
- ♦ The reception will be on the 2nd floor cross-over 6:00-7:30pm on Thursday

Coffee, Lunches, and Reception



- ♦ **Limited number** of 2045 Muon Collider Coffee Mugs (design by Tova Holmes) available for \$5
- ♦ Please contact me or Isobel Ojalvo (ojalvo@cern.ch) if you are interested in getting one

Code of Conduct

- ◆ Please be advised that you are required to comply with the APS code of Conduct for meetings, DPF Core Principles and Community Guidelines and Fermilab Statement of Community Standards.
- ◆ They are available on the Indico site: <https://indico.fnal.gov/event/56615/>

Thank you!

Organizing Committee:

Pushpa Bhat, Sergo Jindariani (Fermilab, Future Colliders Group)

Karri DiPetrillo (University of Chicago/Fermilab)

Kevin Black, Sridhara Dasu (Wisconsin)

Tova Holmes (Tennessee)

Patrick Meade (Stony Brook)

Isobel Ojalvo (Princeton)

Simone Pagan Griso (LBNL)

LPC Admins: Terry G., Terry R., Carrie and Frankie

CMS/LPC, FRA and Fermilab Conference Office

And everyone else who helped with the organization!

We wish you a nice and productive workshop!